

CLAIMS

What is claimed is:

- 5           1.     A digital recording and playback system comprising:  
            an audio capturing device configured to receive a voice input;  
            a high compression encoder (HCE) coupled to said audio capturing  
            device and configured to generate digital wave data corresponding to said  
            voice input;
- 10           a voice recognition engine (VRE) coupled to said audio capturing device  
            and configured to generate text data corresponding to said voice input;  
            a memory sub-system selectively coupled to said HCE and said VRE and  
            configured to store said digital wave data and said text data; and  
            wherein said HCE and said VRE are operable to concurrently generate
- 15           said digital wave data and said text data in response to said voice input such  
            that said digital wave data and said text data can be stored in a synchronized  
            manner.
- 20           2.     The system as recited in Claim 1 further comprising a first switch  
            coupled between said HCE and said memory sub-system and also between  
            said VRE and said memory sub-system, said first switch configured to couple  
            one of said HCE and said VRE to said memory sub-system and to  
            simultaneously decouple the other one of said HCE and said VRE from said  
            memory sub-system.

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3. The system as recited in Claim 1 further comprising:

a decoder selectively coupled to said memory sub-system and configured to decode said digital wave data into decoded audio data;

a digital-to-analog (D/A) converter coupled to said decoder and  
5 configured to convert said decoded audio data into an analog signal; and  
an audio output device coupled to said D/A converter and configured to render a voice output corresponding to said voice input from said analog signal.

4. The system as recited in Claim 3 further comprising an amplifier

10 coupled between said D/A converter and said audio output device and configured to amplify said analog signal.

5. The system as recited in Claim 3 further comprising a display sub-system selectively coupled to said memory sub-system and configured to

15 display said text data.

6. The system as recited in Claim 5 further comprising a second switch coupled between said decoder and said memory sub-system and also between said display sub-system and said memory sub-system, said second

20 switch configured to couple one of said decoder and said display sub-system to said memory sub-system and to simultaneously decouple the other one of said decoder and said display sub-system from said memory sub-system.

7. The system as recited in Claim 5 wherein said display sub-system

25 comprises a liquid crystal display (LCD).

8. The system as recited in Claim 1 wherein said system is portable and battery-powered.

9. The system as recited in Claim 1 wherein said memory sub-  
5 system comprises semiconductor flash memory.

10. The system as recited in Claim 1 wherein said VRE uses Hidden Markov Model (HMM) techniques to perform voice recognition.

10 11. The system as recited in Claim 1 wherein said HCE is operable to achieve a compression ratio of two kilobits per second (2 kbit/s).

12. The system as recited in Claim 2 wherein said first switch is controlled based on said text data.

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13. A method for audio recording and playback in a portable device, said method comprising the steps of:

a) capturing a voice input;

b) performing high compression encoding on said voice input to  
20 generate digital wave data;

c) performing voice recognition on said voice input to generate text data;

d) storing said digital wave data and said text data in said portable device; and

25 wherein said steps b) and c) are performed concurrently to generate said digital wave data and said text data in response to said voice input such that

said digital wave data and said text data can be stored in a synchronized manner.

14. The method as recited in Claim 13 wherein said step d) comprises  
5 the step d1) of alternately storing portions of said digital wave data and  
corresponding portions of said text data such that said digital wave data and  
said text data is synchronized.

15. The method as recited in Claim 13 further comprising the steps of:  
10 e) retrieving said digital wave data from said portable device;  
f) decoding said digital wave data into decoded audio data;  
g) converting said decoded audio data into an analog signal; and  
h) generating a voice output corresponding to said voice input from  
said analog signal.

15 16. The method as recited in Claim 15 further comprising the step of  
amplifying said analog signal.

17. The method as recited in Claim 15 further comprising the steps of:  
20 i) retrieving said text data from said portable device; and  
j) displaying said text data.

18. The method as recited in Claim 17 wherein said step e) comprises  
the step of retrieving portions of said digital wave data from said portable device  
25 and said step i) comprises the step of retrieving portions of said text data  
corresponding to said portions of said digital wave data from said portable

device, and wherein said steps e) and i) are performed alternately such that said retrieving of said digital wave data and said text data is synchronized.

19. The method as recited in Claim 17 wherein said step j) comprises  
5 the step of displaying said text data on a liquid crystal display (LCD).

20. The method as recited in Claim 13 wherein said portable device is battery-powered.

10 21. The method as recited in Claim 13 wherein said step d) comprises the step of storing said digital wave data and said text data in semiconductor flash memory within said portable device.

22. The method as recited in Claim 13 wherein said step c) comprises  
15 the step of performing voice recognition on said voice input to generate text data using Hidden Markov Model (HMM) techniques.

23. The method as recited in Claim 13 wherein said high compression encoding achieves a compression ratio of two kilobits per second (2 kbit/s).  
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24. The method as recited in Claim 14 wherein said step d1) is controlled based on said text data.

25. A digital recording and playback system comprising:  
25 an audio capturing means for receiving a voice input;  
a high compression encoding means coupled to said audio capturing means for generating digital wave data corresponding to said voice input;

a voice recognition means coupled to said audio capturing means for generating text data corresponding to said voice input; and

a storage means selectively coupled to said high compression encoding means and said voice recognition means for storing said digital wave data and said text data, wherein said high compression encoding means and said voice  
5 recognition means are operable to concurrently generate said digital wave data and said text data in response to said voice input such that said digital wave data and said text data can be stored in a synchronized manner.

10 26. The system as recited in Claim 25 further comprising a first switching means coupled between said high compression encoding means and said storage means and also between said voice recognition means and said storage means, said first switching means for coupling one of said high compression encoding means and said voice recognition means to said  
15 storage means while simultaneously decoupling the other one of said high compression encoding means and said voice recognition means from said storage means.

20 27. The system as recited in Claim 25 further comprising:  
a decoding means selectively coupled to said storage means for decoding said digital wave data into decoded audio data;  
a digital-to-analog (D/A) converting means coupled to said decoding means for converting said decoded audio data into an analog signal; and  
an audio output means coupled to said D/A converting means for  
25 generating a voice output corresponding to said voice input from said analog signal.

28. The system as recited in Claim 27 further comprising an amplifying means coupled between said D/A converting means and said audio output means for amplifying said analog signal.

5 29. The system as recited in Claim 27 further comprising a display means selectively coupled to said storage means for displaying said text data.

30. The system as recited in Claim 29 further comprising a second switching means coupled between said decoding means and said storage means and also between said display means and said storage means, said  
10 second switch for coupling one of said decoding means and said display means to said storage means while simultaneously decoupling the other one of said decoding means and said display means from said storage means.